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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,592	10/05/2005	David Anthony Barrow	930058-2004	6831

7590 05/23/2008  
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EXAMINER
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CHAUDRY, ATIF H

ART UNIT	PAPER NUMBER
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3753

MAIL DATE	DELIVERY MODE
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05/23/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/534,592	<b>Applicant(s)</b> BARROW ET AL.	
	<b>Examiner</b> ATIF H. CHAUDRY	<b>Art Unit</b> 3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 21-42 is/are pending in the application.
- 4a) Of the above claim(s) 23-27, 29, 30 and 37-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21, 22, 28, 31-36 and 40-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/11/05, 11/25/05, 12/09/05, 06/19/06</u> . | 6) <input type="checkbox"/> Other: _____  |



## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of Group I, claim 42 in the reply filed on 4/28/08 is acknowledged.
2. Claims 23-27, 29, 30, 37-39 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 4/28/08.
3. Currently generic claims 21, 22, 28, 31-36, 40, and 41 and claim 42 are pending in the application.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

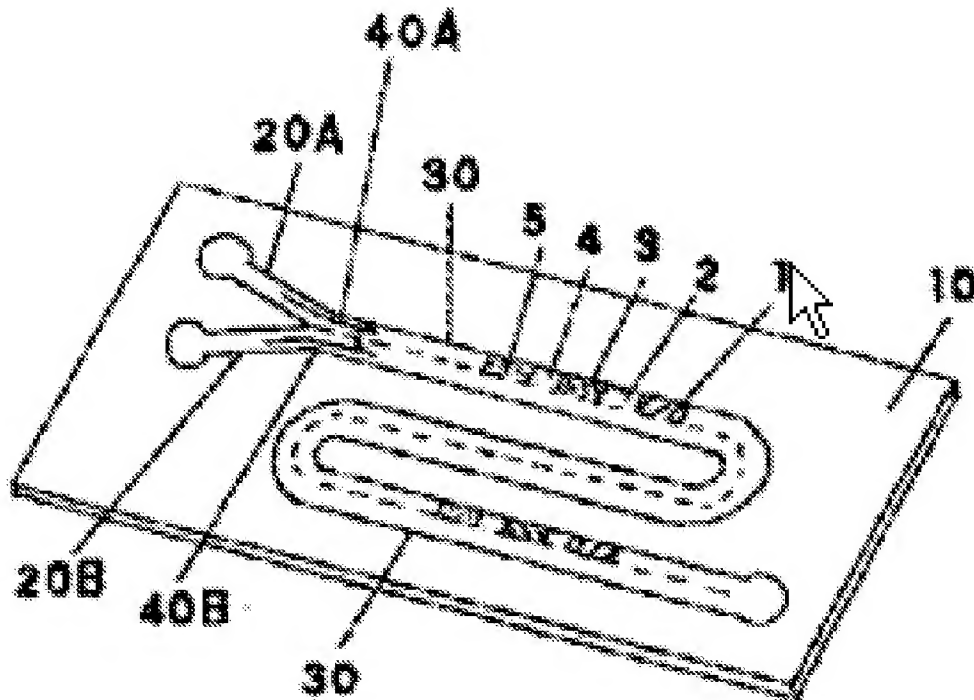
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

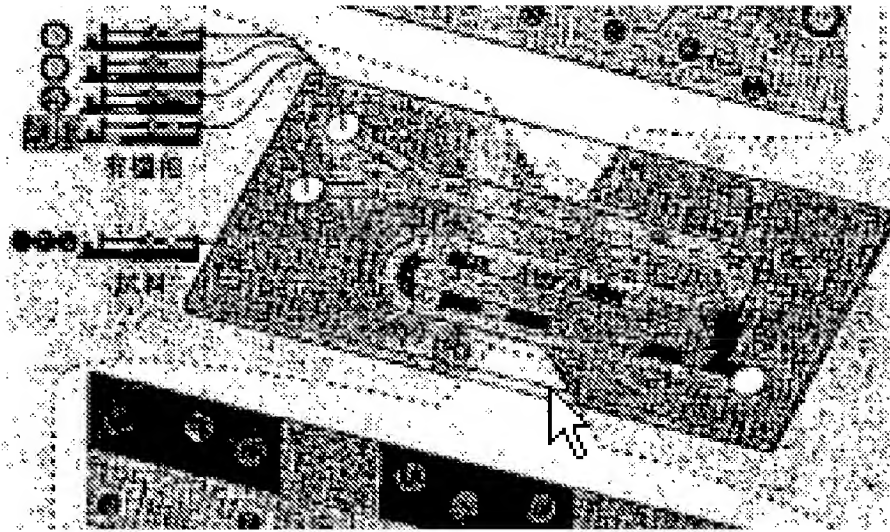
5. Claims 21, 31, 32, 33, and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Takehiko (JP2002277478).
6. Regarding claim 21, Takehiko (fig. 1) discloses a device for producing segmented fluid flow, comprising inlet passages 20A, 20B merging into a third passage 30 causing segmented flow.

Art Unit: 3753

7. Regarding claims 31, 32, and 33, Takehiko (fig. 1) discloses a method of producing segmented flow using a device comprising a first conduit 30 provided with a discontinuity at 40A where it splits into two inlet passages 20A, 20B which provide immiscible fluid to merge at the intersection and cause segmented flow downstream of the discontinuity.

8. Regarding claim 36, Takehiko discloses different sized alternate segments in figures 2 and 4, which inherently imply different flow rates of the two fluids.





***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 22 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takehiko (JP2002277478) in view of Ismagilov (US Patent 7129091).

12. Takehiko fails to disclose parallel inlet passages. Ismagilov (fig. 4) teaches a segmented flow device having parallel inlet passages merging into a third passage causing segmented flow. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have provided the segmented flow device disclosed by Takehiko with parallel inlet passages as taught by Ismagilov in order to improve laminar flow and to avoid turbulence or mixing at the intersection.

13. Claims 28 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takehiko (JP2002277478) in view of Burns (US PG Pub US 20030145894).

14. Regarding claims 28 and 35, Takehiko fails to disclose fluoropolymer surfaces. Burns (page 1, para 12) teaches a segmented flow device comprising pathways made of fluoropolymer to avoid sticking. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have provided the flow device disclosed by Takehiko with fluoropolymer conduits as taught by Burns in order to avoid sticking.

15. Claims 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takehiko (JP2002277478) in view of Burns (US PG Pub US 20030145894) further in view of Kopf-Sill (US Patent 5957579).

16. Takehiko discloses a device for producing segmented fluid flow, comprising inlet passages 20A, 20B merging into a constriction, which is an intersection with a third passage 30 causing segmented flow. Takehiko fails to disclose

fluoropolymer surfaces or two substrates. Burns (page 1, para 12) teaches a segmented flow device comprising pathways made of fluoropolymer to avoid sticking. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have provided the flow device disclosed by Takehiko with fluoropolymer conduits as taught by Burns in order to avoid sticking. Kopf-Sill (fig. 4) teaches a segmented flow device comprising of flow channels made by two substrates disposed faced to face and surface of one substrate profiled to define conduits. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have provided the flow device disclosed by Takehiko as modified, with two substrates as taught by Kopf-Sill to define conduits resulting in a device yielding predictable results.

17. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takehiko (JP2002277478) in view of Burns (US PG Pub US 20030145894) further in view of Kopf-Sill (US Patent 5957579) and Kennedy (US Patent ).

18. Takehiko fails to disclose outer members holding the substrates. Kennedy (fig. 2C) teaches a microfluidic device with outer clamps 220, 225 holding two substrates 5, 35 together. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have provided the flow device disclosed by Takehiko with clamping means as taught by Kennedy in order to secure together the two substrates.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Atif H. Chaudry whose telephone number is 571-270-3768. The examiner can normally be reached on Mon-Fri Alternate Friday off 9-5 EST.



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Huson can be reached on 571-272-4887. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Atif H Chaudry/  
Examiner, Art Unit 3753  
**2008**

/John Rivell/  
Primary Examiner, Art Unit 3753

5/7/2008